

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 05 JAN 2006

Applicant's or agent's file reference P70672PC00	FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)
International application No. PCT/NL2004/000704	International filing date (day/month/year) 07.10.2004	Priority date (day/month/year) 09.10.2003	
International Patent Classification (IPC) or both national classification and IPC B07C5/36, B65G47/96			
Applicant FPS FOOD PROCESSING SYSTEMS B.V. et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

I ☒ Basis of the opinion

II ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

IV ☐ Lack of unity of invention

V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

Date of submission of the demand 09.08.2005	Date of completion of this report 04.01.2006
Name and mailing address of the International preliminary examining authority: <div style="margin-top: 10px;"> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 </div>	Authorized Officer Wich, R Telephone No. +49 89 2399-7517



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/NL2004/000704

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

4-8 as originally filed
1-3 filed with telefax on 28.12.2005

Claims, Numbers

1-6 filed with telefax on 28.12.2005

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	1-6
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/NL2004/000704

The document AU-B-701 354 (D2) discloses an apparatus for sorting products such as fruits, from which the subject-matter of claim 1 at least differs in that the carrier automatically returns to the conveying position.

This feature is not known or rendered obvious from the documents cited in the search report. In consequence, the subject-matter of claim 1 and the dependent claims 2-6 meets the requirements of Article 33(2) and (3) PCT.

The subject-matter of claim 1 does not meet the requirements of Article 6 PCT, as the characterising portion comprises features related to method steps rather than features of the apparatus itself to define the subject-matter.

The feature "the conveying position" (line 23) has not been defined in the claim itself, the preamble only defining an inspection position, a weighing position and a discharge position.

The feature "said carrier" (line 23) has not been defined in the claim previously. It appears that this feature should have been defined as "carrier element" (cf. lines 12).

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P70672

Title: Carrier for sorting apparatus

The present invention relates to an apparatus as described in the preamble of claim 1.

Australian patent no. 701354

Such an apparatus is largely known from, for instance, ~~EP 580784~~ ^{EP-A-580784} ~~that publication~~ ^{In}

5 having mainly rolling elements with carrier-eject elements therebetween. The conveyor of this machine is an endless chain onto which components for conveying units are snap-fitted. In an assembly part, diabolo-like rolling elements are rotatable and displaceable in a vertical slotted hole, so that the products, with the rolling elements in a high position, rest only on the rolling
10 elements and can rotate when, for instance, they are passed under or along an inspection camera. The carrier elements are likewise vertically displaceable, so that the products resting on them, at least during weighing, do not come into contact with the rollers. Additionally connected to the chain are laterally hinging and upwardly moving ejection brackets which lift the
15 products laterally away from the carrier elements and thus push them away therefrom, so that the products end up on the discharge devices.

Although such a machine provides for many needs, it has been found that during the sorting of several types of products, in particular fruits such as apples and citrus fruits, but also apricots, kiwis, plums, peaches, tomatoes,
20 and the like, the dimensions of the components of conveying units need to be adapted, but also the sorting possibilities, more particularly the ejection possibilities, need to be broadened. Adapting a machine as described above, viz. adapting components at well-chosen positions, or providing exchangeable components, proves not to be possible or entails far too much expense.

25 In order to provide for such a need, the apparatus according to the present invention is characterized in that the discharge guide means only ~~are in~~ ^{are in} the discharge position when they are energized by energizing means,

new page 2

~~/while discharge positions for lateral discharge on both sides of the conveyor/~~
~~can be assumed.~~

In an advantageous manner, such discharge guide means provide for the tilting of carrier elements to both sides of the conveyor, and hence the discharge of products on both sides of the conveyor. Furthermore, this solution advantageously enables the sorting of a wider range of products. A further great advantage is that a carrier element automatically returns to the conveying position, so that fewer auxiliary means in the often very voluminous sorting machines will suffice.

A sorting machine for such sorting with discharge positions for the discharge guide means on both sides of the conveyor is known, for instance, from EP 675768. In this machine, each rolling element, that is, a diabolo-like roller, has its rolling shaft rotatably connected to a supporting bracket. This supporting bracket in turn is connected with a rectangular U-shaped bracket, viz. at the right-angled bent ends of the U-legs, and in this way is rotatable about an axis of the same direction as the rolling shaft. The base of this U-bracket is rotatably connected to a connecting element. The rolling shaft, the U-ends, and the connecting shaft have the same direction, viz. perpendicular to the conveying direction. In this construction, the combination of a single roller and the supporting bracket side located opposite thereto forms a carrier element during conveyance and weighing. The supporting bracket can tilt about the U-ends and the connecting shaft. In particular, the base of the U-bracket connected with the connecting element is rotatable, on the one hand in a first direction, viz. about an axis having the same direction as that of the shafts mentioned, and on the other hand in a second direction perpendicular thereto, that is, in the direction of the conveyor, and thereby tilting to one of the two sides. Upon tilting about the first direction, the rollers are displaced substantially vertically, and for instance moved up, so that the products rest on successive rollers and can be rotated for inspection purposes. In the second rotation direction, the combination of supporting bracket and roller will not

< In the Australian patent 701 354 the cup once tilted to a discharge position will have to be returned to the horizontal position as well. >
new page 3

only tilt laterally but also slide laterally over the connecting shaft. After discharge of a product in this way, this combination will have to be returned to the horizontal position using guide means, which must be considered a major disadvantage. <->

5 In a further embodiment, the apparatus according to the invention is characterized in that the discharge guide means comprise a leaf spring, which leaf spring ^{is in} ~~assumes~~ a rest position in case of conveyance and weighing, and has a deflection only upon movement to and from the discharge position, more particularly, that the leaf spring upon energization at discharge, from
10 the rest position, undergoes deflections laterally and perpendicularly relative to the conveying direction, whereby the respective carrier element tilts laterally accordingly, and further, that the energizing means comprise raising guide elements, arranged on at least one of the sides of the conveyor, intended for guiding upwards and raising the side of the carrier element and
15 thereby tilting the carrier element, whereby a product positioned on such carrier element is discharged on the side opposite the side mentioned.

In this manner, in a simple, but especially advantageous space-saving manner, a solution is offered for such a discharge guide means.

Further details and particular aspects of the apparatus according to
20 the invention will be discussed and explained with reference to the accompanying drawings in which
Fig. 1 shows the principal parts of the conveying unit in disassembled condition in isometric elevational view,
Fig. 2 shows a single conveying unit attached to an endless chain,
25 Fig. 3 shows the relative positioning of the carrier element and a single rolling element for the situation during conveyance,
Fig. 4 shows the relative positioning of a carrier element and a single rolling element for the inspection position, and
Fig. 5 shows the relative positioning of a carrier element and a single rolling
30 element for the situation during discharge.

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Claims

1. An apparatus for sorting products such as fruits, the apparatus comprising,

- an endless conveyor, for instance a chain,
 - conveying units for conveying the products, all one behind the other in a conveying direction and situated in a substantially horizontal plane, each connected with the conveyor, and each for conveying a single product, wherein each conveying unit is formed by
 - at least two rolling elements with the axes perpendicular to the conveying direction, for instance diabolo-like rolling elements,
 - a connecting element by which each rolling element is rotatably and vertically movably connected with the conveyor, and
 - a carrier element arranged between the rolling elements, while at least in an inspection position each product is situated on two successive rolling elements and in a weighing position each product is situated on said carrier element, and each carrier element is connected with moving means for moving the carrier element to and from the weighing position, and with discharge guide means for the movement to and from a discharge position for laterally discharging the product onto an output apparatus, $\langle - \rangle$ characterized in that
- 20 the discharge guide means only ^{are in} ~~assume~~ the discharge position when they are energized by energizing means, ~~while~~ ^{while} discharge positions for lateral discharge on both sides of the conveyor can be assumed. ^{and that a said carrier automatically returns to the conveying position.}

2. An apparatus according to claim 1, characterized in that
- 25 the discharge guide means comprise a leaf spring,

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is in
wherein the leaf spring ~~assumes~~ a rest position in the case of conveyance and weighing, and has a deflection only upon movement to and from the discharge position.

5 3. An apparatus according to claim 2, characterized in that the leaf spring upon energization at discharge, from said rest position, undergoes deflections lateral and perpendicular relative to the conveying direction, whereby the respective carrier element tilts laterally accordingly.

10 4. An apparatus according to any one of the preceding claims, characterized in that the energizing means comprise raising guide means, arranged on at least one of the sides of the conveyor, intended for guiding upwards and raising said side of the carrier element and thereby tilting the carrier element, whereby a
15 product situated on such a carrier element is discharged on the side other than said side.

5. An apparatus according to any one of the preceding claims, characterized in that
20 the moving means comprise two hinging members.

6. An apparatus according to any one of the preceding claims, characterized in that a carrier element and a connecting element each comprise a fitting part so that both elements are fixed in the weighing position and in the
25 conveyance position.